

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

## NIA Project Registration and PEA Document

### Date of Submission

Mar 2017

### Project Reference Number

NIA\_NPG\_013

## Project Registration

### Project Title

Measuring the Societal Impact of Network Activities

### Project Reference Number

NIA\_NPG\_013

### Project Licensee(s)

Northern Powergrid

### Project Start

March 2017

### Project Duration

1 year and 7 months

### Nominated Project Contact(s)

Northern Powergrid – Chris Goodhand, Northern Gas Networks – Richard Hynes-Cooper

### Project Budget

£81,600.00

## Summary

The Energy Innovation Centre (EIC) worked with Northern Powergrid, Northern Gas Networks, Northumbrian Water & Yorkshire Water to develop a Call for Innovation addressing the issue of measuring the impact and value of network activities. Utility networks have an extremely positive impact on customers in the North East & Yorkshire region, providing employment and investment. In selecting innovative solutions to maintaining, replacing or extending the network, the four companies recognise that this may have non-obvious impacts on our societal stakeholders. Often these are seen as a negative impact, but not necessarily quantifiable and balance with the positive.

The four networks believed by working collaboratively and researching this topic the outcome would provide a wider more cohesive approach that could be replicated across the UK. However, due to the dispersed nature of the available data, lack of direct measures and diversity of the area a research / feasibility study is required before developing any calculation methodology.

It is unique within the utility sector as it brings together four networks, whose footprint has a significant coverage in the North East of England. These four companies recognise the impact their activities have on customers in the north east and wish to develop a framework that is seen as consistent across all utilities.

### Nominated Contact Email Address(es)

yourpowergrid@northernpowergrid.com

## Problem Being Solved

The UK Utility Distribution Networks currently undertake various essential works which can be seen to have adverse effects on the social environment in which they are undertaken. These mainly include excavations in roads, streets and on customer property which cause traffic congestion, noise, dirt & dust etc. and also various currently undetermined health impacts.

Currently there is no single comprehensive framework for measuring the potential societal impacts associated with a proposed intervention. As a result these are not fully considered when evaluating new technologies or approaches that could be used for undertaking network activities. It is therefore difficult to compare the relative advantages of different approaches to delivering outcomes.

All of the Gas Distribution Networks (GDNs), District Network Operations (DNOs) and Water and Wastewater companies have explored different elements of societal impact, with focus in different areas. However, this work has never been brought together, and combined with research from other sectors such as transport and construction to create a comprehensive picture of potential societal impacts, and gaps where further research may be needed.

When assessing innovative solutions or determining operational activities networks undertake a cost benefit analysis, including non-financial impact assessments. However, these often fail to take into account overall societal costs & benefits, which could increase network costs, but provide greater benefits to UK plc.

This unique project brings together four utility networks in the north east of England, Northern Powergrid, Northumbrian Water Ltd, Yorkshire Water Ltd & Northern Gas Networks to assess societal impacts of network activities from both benefits and costs on from both sides.

## Method(s)

This will be a research project that has the potential to bring about a step-change in understanding network operators' impacts on local populations and other stakeholders.

The research will cover the four areas:

### Current state of knowledge

This will involve research into current methods of measuring impacts of network activities, research into how other sectors (both nationally and internationally) may measure societal impact, the metrics used and any existing social impact calculators they already employ, including their perceived precision/benefit, and academic research into other social assessment techniques that may not currently be employed.

### Assessment of impacts

By applying the knowledge gained from the literature review the project will identify relevant data that can be used to quantify impacts under different circumstances.

### Gap analysis

This gap analysis will identify where it is not possible to find quantitative data sources for each of the impacts. The relative importance of these gaps will be prioritised.

### Recommendations

The recommendations will involve the identification of potential areas of additional research to fill the gaps identified (and the type of research required to fill these gaps), as well as a tool road map and outline (i.e. for a subsequent stage), along with other suggestions for "quick wins".

## Scope

The Energy Innovation Centre (EIC) worked with Northern Powergrid, Northern Gas Networks, Northumbrian Water & Yorkshire Water to develop a Call for Innovation addressing the issue of measuring the impact and value of network activities. Utility networks have an extremely positive impact on customers in the North East & Yorkshire region, providing employment and investment. In selecting innovative solutions to maintaining, replacing or extending the network, the four companies recognise that this may have non-obvious impacts on our societal stakeholders. Often these are seen as a negative impact, but not necessarily quantifiable and balance with the positive.

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## Objective(s)

Stage 1 Objectives – Workshops, Interviews, Literature Review

Determine what existing information there is regarding societal impact of network activities or related activities that may be relevant, and assess the applicability of these to meeting the network operators' needs.

Stage 2 Objectives – Data Indicators and Impacts

Gather information on quantitative variables that influence societal impact, resulting from different network activities.

Stage 3 Objectives – Gap Analysis

Identify gaps in the evidence base where further research may be required to provide a comprehensive picture of societal impact from network activities.

Stage 4 Objectives – Recommendations & Final Report

Provide recommendations as to the next stages that may be appropriate for the network operators to consider in achieving the overall aim.

## Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

## Success Criteria

All information from the project will be aggregated and used to produce a final report. This will include an executive summary suitable for individuals from any background, as well as a clearly structured report containing the detailed analysis. Depending on the nature of tools, evidence and data that has been identified throughout the project the report will include links, annex or supplementary information. It is not envisaged at this stage that full guidance on using data will be included, although we would be happy to discuss this if suitable data is available on which this could be based as the project progresses.

The results will provide:

- A definitive list of both qualitative & quantitative indicators of societal impact of network activities.
- Identification of current applicability of existing indicators and use.
- Identified gaps in current data, availability and prioritisation of the sources.
- Recommendation on use, development and next stages required to complete a robust framework

The envisaged this project will include research into current methods of measuring impacts of network activities and result in a feasibility report as to the best methods of utilising the findings from this research to develop a method of assessing current activities and future methods against the newly understood social impacts.

## Project Partners and External Funding

n/a

## Potential for New Learning

n/a

## Scale of Project

The project is a small scale research study.

## Technology Readiness at Start

## Technology Readiness at End

TRL3 Proof of Concept

TRL5 Pilot Scale

## **Geographical Area**

Workshops & Interviews will take place with subject matter experts in all four companies in the North-east of England. Geographical applicability will be GB wide.

## **Revenue Allowed for the RIIO Settlement**

None.

## **Indicative Total NIA Project Expenditure**

£47,000

## Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

### Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

#### How the Project has the potential to facilitate the energy system transition:

n/a

#### How the Project has potential to benefit consumer in vulnerable situations:

n/a

### Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

#### Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

TRL3. Not required.

#### Please provide a calculation of the expected benefits the Solution

N/A

#### Please provide an estimate of how replicable the Method is across GB

It is anticipated that the methodology developed would be fully applicable to the entire GB network, both electricity and gas, plus the networks of other non-RIIO utilities.

#### Please provide an outline of the costs of rolling out the Method across GB.

Negligible.

### Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- A specific novel operational practice directly related to the operation of the Network Licensees system
- A specific novel commercial arrangement

RIIO-2 Projects

- A specific piece of new equipment (including monitoring, control and communications systems and software)

- A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- A specific novel commercial arrangement

## Specific Requirements 4 / 2a

### Please explain how the learning that will be generated could be used by the relevant Network Licensees

The learning will be generated by a unique cross utility research into existing model, learning from other sectors and international investigation. The project outputs should improve the ability of the networks to assess the true societal cost and benefits of their current and potential activities.

### Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

The Northern Powergrid innovation strategy specifically states that we will seek to reduce our environmental impact. This project addresses that need in allowing us to correctly value and therefore prioritise potential interventions that seek to directly impact environmental improvement. Additionally the unseen impact of more general activities can be correctly valued and considered as part of investment or operational decision making.

The project also provides support to societal stakeholders as part of Infrastructure North.

- Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

### Is the default IPR position being applied?

- Yes

## Project Eligibility Assessment Part 2

### Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

### Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

n/a

### If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

## Additional Governance And Document Upload

### Please identify why the project is innovative and has not been tried before

n/a

### Relevant Foreground IPR

n/a

### Data Access Details

n/a

**Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities**

n/a

**Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project**

n/a

**This project has been approved by a senior member of staff**

Yes